

Application No.: 10/029,559
Amendment and Response dated March 28, 2006
Reply to Office Action of November 30, 2005
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Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the subject application, and please amend the claims as follows:

Claims 1-74. (Canceled)

Claim 75. (Currently amended) The radially expandable stent of claim ~~[[74]]~~ 83 wherein every other strut comprises a barb.

Claim 76. (Previously presented) The radially expandable stent of claim 75 wherein the struts adjacent the struts that comprise the barbs comprise a barb tuck pad.

Claim 77. (Previously presented) The radially expandable stent of claim 75 wherein the struts adjacent the struts that comprise the barbs comprise a barb tuck slot.

Claim 78. (Currently amended) The radially expandable stent of claim ~~[[74]]~~ 83 wherein the barbs have a length between about 1 mm to about 5 mm.

Claim 79. (Currently amended) The radially expandable stent of claim ~~[[74]]~~ 83 wherein the barbs have a length between about 2 mm to about 4 mm.

Claim 80. (Currently amended) The radially expandable stent of claim ~~72~~ 83 ~~wherein the serpentine ring of the second portion comprises n interconnected struts wherein the interconnection between adjacent struts form the n/2 proximal and the n/2 distal apices,~~
wherein a width of the struts are tapered between the proximal apices and distal apices.

Claim 81. (Previously presented) The radially expandable stent of claim 80 wherein the struts have a maximum strut width at the proximal apices or distal apices and a minimum strut width between the proximal apices and the distal apices.

Claim 82. (Previously presented) The radially expandable stent of claim 81 wherein a ratio of the maximum strut width to minimum strut width is between about 1:1 and about 10:1.

Claim 83. (Currently amended) A The radially expandable stent of claim 74 comprising:

a first portion that comprises a serpentine ring that defines n proximal apices and n distal apices;

a second portion that comprises a serpentine ring that defines n/2 proximal apices and n/2 distal apices; and

cantilevered connector elements that extend distally from the n distal apices of the first portion, wherein each of the cantilevered connector elements is affixed to an associated cantilevered connector element,

wherein the serpentine ring of the second portion comprises n interconnected struts wherein the interconnection between adjacent struts form the n/2 proximal and the n/2 distal apices, wherein at least one of the n struts comprises a barb,

wherein the struts define a longitudinal axis, wherein at least one barb projects radially outward from the longitudinal axis at an elevation angle between about 10 degrees to about 45 degrees.

Claim 84. (Previously presented) The radially expandable stent of claim 83 wherein at least one barb projects at an azimuth angle relative to the longitudinal axis of the strut between about 5 to about 70 degrees so that the barb is laterally biased in a plane that is tangent to an outside surface of the strut.

Claim 85. (Currently amended) The radially expandable stent of claim [[74]] 83 wherein the barb(s) are integrally formed as part of the at least one strut.

Claim 86. (Currently amended) The radially expandable stent of claim [[72]] 83 wherein the radially expandable stent defines a length and the first portion and second portion define outer diameters,

wherein the outer diameters of the radially expandable stent varies along the length.

Claim 87. (Currently amended) The radially expandable stent of claim [[72]] 83 wherein the radially expandable stent defines a length and the first portion and second portion define an outer diameter,

wherein the outer diameter of the radially expandable stent is substantially constant along the length.

Claim 88. (Currently amended) The radially expandable stent of claim [[72]] 83 wherein the n connector elements are configured to be coupled to connector elements of a connector member.

Claim 89. (Previously presented) The radially expandable stent of claim 88 wherein the connector member comprises a serpentine ring that comprises n apices.

Claim 90. (Currently amended) The radially expandable stent of claim [[72]] 83 wherein the connector elements comprise opposing shoulder portions at a proximal end and a distal end.

Claim 91. (Currently amended) The radially expandable stent of claim [[72]] 83 wherein at least one of the first portion and second portion comprise grooves.

Claim 92. (Currently amended) The radially expandable stent of claim ~~[[72]]~~ 83 wherein the stent is self-expandable from a constrained state to an expanded state.

Claim 93. (Previously presented) The radially expandable stent of claim 92 wherein the radially expandable stent is comprised of a shape memory alloy.

Claim 94 (Currently amended) The radially expandable stent of claim ~~[[72]]~~ 83 wherein n is 8.

Claim 95. (Currently amended) The radially expandable stent of claim ~~[[72]]~~ 83 wherein n is 6.

Claim 96 (Canceled)

Claim 97. (Currently amended) A ~~The~~ radially expandable stent of ~~claim 96~~ comprising:

a first portion that comprises a serpentine ring that defines n proximal apices and n distal apices;

a second portion that comprises a serpentine ring that defines n/2 proximal apices and n/2 distal apices; and

cantilevered connector elements that extend distally from the n distal apices of the first portion, wherein each of the cantilevered connector elements is affixed to an associated cantilevered connector element,

wherein the n proximal apices of the first portion comprise a curved outer surface and a curved inner surface,

wherein the curved inner and outer surfaces of the proximal apices each comprises a circular radius of curvature,

wherein the circular radii of curvature comprise a common center point.

Claim 98. (Currently amended) A The radially expandable stent of claim 96 comprising:

a first portion that comprises a serpentine ring that defines n proximal apices and n distal apices;

a second portion that comprises a serpentine ring that defines n/2 proximal apices and n/2 distal apices; and

cantilevered connector elements that extend distally from the n distal apices of the first portion, wherein each of the cantilevered connector elements is affixed to an associated cantilevered connector element,

wherein the n proximal apices of the first portion comprise a curved outer surface and a curved inner surface,

wherein the curved inner and outer surfaces of the proximal apices each comprises a circular radius of curvature,

wherein the circular radii of curvature are offset from each other.

Claim 99 (Canceled)

Claim 100. (Currently amended) A The radially expandable stent of claim 99 comprising:

a first portion that comprises a serpentine ring that defines n proximal apices and n distal apices;

a second portion that comprises a serpentine ring that defines n/2 proximal apices and n/2 distal apices; and

cantilevered connector elements that extend distally from the n distal apices of the first portion, wherein each of the cantilevered connector elements is affixed to an associated cantilevered connector element,

wherein the n/2 proximal apices of the second portion comprise a curved outer surface and an inner surface,

wherein the curved inner and outer surfaces of the proximal apices each comprise a circular radius of curvature,

wherein the circular radii of curvature comprise a common center point.

Claim 101. (Currently amended) A ~~The~~ radially expandable stent ~~of claim 99~~ comprising:

a first portion that comprises a serpentine ring that defines n proximal apices and n distal apices;

a second portion that comprises a serpentine ring that defines n/2 proximal apices and n/2 distal apices; and

cantilevered connector elements that extend distally from the n distal apices of the first portion, wherein each of the cantilevered connector elements is affixed to an associated cantilevered connector element,

wherein the n/2 proximal apices of the second portion comprise a curved outer surface and an inner surface,

wherein the curved inner and outer surfaces of the proximal apices each comprise a circular radius of curvature,

wherein the circular radii of curvature are offset from each other.

Claim 102 (Canceled)

Claim 103. (Currently amended) The radially expandable stent of claim ~~102~~ 120 wherein the one or more barbs and tuck pads are integrally formed with the stent and wherein the one or more barbs are configured to be released by the one or more barb tuck pads when the stent is in a deployed configuration.

Claim 104. (Currently amended) The radially expandable stent of claim ~~102~~ 120 wherein the one or more barbs have a length from about 1 to about 5 mm.

Claim 105. (Currently amended) The radially expandable stent of claim ~~102~~ 120 wherein the one or more barbs have a length from about 2 to about 4 mm.

Claim 106. (Currently amended) The radially expandable stent of claim ~~102~~ 120 wherein the one or more barbs project radially outward from a longitudinal axis of a strut in the radially expandable stent and at an elevation angle between about 10 degrees to about 45 degrees.

Claim 107. (Previously presented) The radially expandable stent of claim 106 wherein the one or more barbs are laterally biased in a plane that is orthogonal to a plane in which the barb radial angle is formed to form a barb kick angle.

Claim 108. (Currently amended) The radially expandable stent of claim ~~102~~ 120 wherein the stent further comprises one or more barb tuck slots and wherein the one or more barbs are received by the one or more barb tuck slots when the stent is in a delivery configuration and the one or more barbs are released from the one or more slots when the stent is in a deployed configuration.

Claim 109. (Currently amended) The radially expandable stent of claim ~~102~~ 120 wherein the radially expandable stent is self-expanding.

Claim 110. (Previously presented) The radially expandable stent of claim 109 wherein the radially expandable stent comprises NiTi.

Claim 111. (Currently amended) The radially expandable stent of claim ~~102~~ 120 wherein the radially expandable stent comprises one or more connector elements.

Claim 112. (Previously presented) The radially expandable stent of claim 111 wherein the connector elements comprise a proximal end and a distal end and opposing shoulder portions at the proximal end and the distal end.

Claim 113 (Canceled)

Claim 114. (Currently amended) The radially expandable stent of claim ~~113~~ 120 wherein every other strut comprises the barb.

Claim 115. (Previously presented) The radially expandable stent of claim 114 wherein the struts adjacent the struts that comprise the barbs comprise the barb tuck pad.

Claim 116. (Currently amended) The radially expandable stent of claim ~~113~~ 120 wherein a width of the struts are tapered between the proximal apices and distal apices.

Claim 117. (Previously presented) The radially expandable stent of claim 116 wherein the struts have a maximum strut width at the proximal apices or distal apices, and a minimum strut width between the proximal apices and the distal apices.

Claim 118. (Previously presented) The radially expandable stent of claim 117 wherein a ratio of the maximum strut width to minimum strut width is between about 1:1 and about 10:1.

Claim 119 (Canceled)

Claim 120. (Currently amended) A ~~The~~ radially expandable stent ~~of claim 119~~
comprising:

one or more barbs and one or more barb tuck pads, wherein the one or more barbs are tucked under the one or more tuck pads when the radially expandable stent is in a delivery configuration,

wherein the radially expandable stent comprises at least one serpentine ring that comprises interconnected struts that define proximal and distal apices,

wherein the proximal apices comprise a curved outer surface and a curved inner surface,
wherein both the inner and outer surfaces of the apices comprise a circular radius of curvature,

wherein the circular radii of curvature comprise a common center point.

Claim 121. (Currently amended) A ~~The~~ radially expandable stent ~~of claim 119~~
comprising:

one or more barbs and one or more barb tuck pads, wherein the one or more barbs are tucked under the one or more tuck pads when the radially expandable stent is in a delivery configuration,

wherein the radially expandable stent comprises at least one serpentine ring that comprises interconnected struts that define proximal and distal apices,

wherein the proximal apices comprise a curved outer surface and a curved inner surface,
wherein both the inner and outer surfaces of the apices comprise a circular radius of curvature,

wherein the circular radii of curvature comprise center points that are offset.

Claim 122. (Currently amended) The radially expandable stent of claim ~~102~~ 120
wherein the radially expandable stent comprises a second serpentine portion, wherein a portion of the at least one a-first serpentine ring is portion integrally formed with a the second serpentine portion, wherein the radially expandable stent defines a length and the first portion and second portion define outer diameters,

wherein the outer diameters of the radially expandable stent vary along their length.

Claim 123. (Currently amended) The radially expandable stent of claim ~~102~~ 120 wherein the radially expandable stent comprises a second serpentine portion, wherein a portion of the at least one a first serpentine ring is portion integrally formed with a the second serpentine portion, wherein the radially expandable stent defines a length and the first portion and second portion define an outer diameter,

wherein the outer diameter of the radially expandable stent is substantially constant along the length.

Claim 124. (Previously presented) A radially expandable stent comprising:

a first portion that comprises a serpentine ring that comprises $2n$ interconnected struts, wherein the interconnected struts define n proximal apices and n distal apices;

a second portion that comprises a serpentine ring that comprises n interconnected struts, wherein the interconnected struts define $n/2$ proximal apices and $n/2$ distal apices,

wherein $n/2$ of the n proximal apices of the first portion are integral with the $n/2$ distal apices of the second portion;

a barb integrally formed on every other strut in the second portion;

a tuck pad integrally formed in the struts in the second portion that are adjacent the struts that comprise the barb; and

connector elements integrally formed with the n distal apices of the first portion.

Claim 125. (Previously presented) The radially expandable stent of claim 124 further comprising a connector member coupled to the connector elements of the first portion.

Claim 126. (Previously presented) The radially expandable stent of claim 125 wherein the connector member comprises a serpentine ring.

Claim 127. (Previously presented) The radially expandable stent of claim 126 wherein the serpentine ring connector member comprises $2n$ interconnected struts that define n proximal apices and n distal apices.

Claim 128. (Previously presented) The radially expandable stent of claim 127 wherein the n proximal apices of the connector member comprise n integral connector member connector elements.

Claim 129. (Previously presented) The radially expandable stent of claim 128 wherein the n connector elements of the connector member are coupled to the n connector elements of the first portion via coupling members.

Claim 130. (Previously presented) The radially expandable stent of claim 129 wherein the coupling members comprise wire or coil wrapped around the connector elements of the connector member and the connector elements of the first portion.

Claim 131. (Previously presented) The radially expandable stent of claim 124 wherein at least one of the first and second portion comprises a set of grooves that are configured to receive release bands.

Claim 132. (Previously presented) The radially expandable stent of claim 124 wherein a width of the struts are tapered between the proximal apices and distal apices.

Claim 133. (Previously presented) The radially expandable stent of claim 132 wherein the struts have a maximum strut width at the proximal apices or distal apices, and a minimum strut width between the proximal apices and the distal apices.

Claim 134. (Previously presented) The radially expandable stent of claim 133 wherein a ratio of the maximum strut width to minimum strut width is between about 1:1 and about 10:1.

Claim 135. (Previously presented) The radially expandable stent of claim 124 wherein the one or more barbs have a length from about 1 to about 5 mm.

Claim 136. (Previously presented) The radially expandable stent of claim 124 wherein the one or more barbs have a length from about 2 to about 4 mm.

Claim 137. (Previously presented) The radially expandable stent of claim 124 wherein the radially expandable stent is self-expanding.

Claim 138. (Previously presented) The radially expandable stent of claim 124 wherein the proximal apices of at least one of the first portion and second portion comprise a curved outer surface and a curved inner surface,

wherein both the inner and outer surfaces of the apices comprise a circular radius of curvature.

Claim 139. (Previously presented) The radially expandable stent of claim 138 wherein the circular radii of curvature comprise a common center point.

Claim 140. (Previously presented) The radially expandable stent of claim 138 wherein the circular radii of curvature comprise center points that are offset.

Claim 141. (Previously presented) The radially expandable stent of claim 124 wherein the one or more barbs project radially outward from a longitudinal axis of a strut in the radially expandable stent and at an elevation angle between about 10 degrees to about 45 degrees.

Claim 142 (Previously presented) The radially expandable stent of claim 124 wherein the one or more barbs are laterally biased in a plane that is orthogonal to a plane in which the barb radial angle is formed to form a barb kick angle.

Claims 143-149 (Canceled)

Claim 150. (New) The radially expandable stent of claim 121 wherein the one or more barbs and tuck pads are integrally formed with the stent and wherein the one or more barbs are configured to be released by the one or more barb tuck pads when the stent is in a deployed configuration.

Claim 151. (New) The radially expandable stent of claim 121 wherein the one or more barbs have a length from about 1 to about 5 mm.

Claim 152. (New) The radially expandable stent of claim 121 wherein the one or more barbs have a length from about 2 to about 4 mm.

Claim 153. (New) The radially expandable stent of claim 121 wherein the one or more barbs project radially outward from a longitudinal axis of a strut in the radially expandable stent and at an elevation angle between about 10 degrees to about 45 degrees.

Claim 154. (New) The radially expandable stent of claim 153 wherein the one or more barbs are laterally biased in a plane that is orthogonal to a plane in which the barb radial angle is formed to form a barb kick angle.

Claim 155. (New) The radially expandable stent of claim 121 wherein the stent further comprises one or more barb tuck slots and wherein the one or more barbs are received by the

one or more barb tuck slots when the stent is in a delivery configuration and the one or more barbs are released from the one or more slots when the stent is in a deployed configuration.

Claim 156. (New) The radially expandable stent of claim 121 wherein the radially expandable stent is self-expanding.

Claim 157. (New) The radially expandable stent of claim 156 wherein the radially expandable stent comprises NiTi.

Claim 158. (New) The radially expandable stent of claim 121 wherein the radially expandable stent comprises one or more connector elements.

Claim 159. (New) The radially expandable stent of claim 158 wherein the connector elements comprise a proximal end and a distal end and opposing shoulder portions at the proximal end and the distal end.

Claim 160. (New) The radially expandable stent of claim 121 wherein every other strut comprises the barb.

Claim 161. (New) The radially expandable stent of claim 160 wherein the struts adjacent the struts that comprise the barbs comprise the barb tuck pad.

Claim 162. (New) The radially expandable stent of claim 121 wherein a width of the struts are tapered between the proximal apices and distal apices.

Claim 163. (New) The radially expandable stent of claim 162 wherein the struts have a maximum strut width at the proximal apices or distal apices, and a minimum strut width between the proximal apices and the distal apices.

Claim 164. (New) The radially expandable stent of claim 163 wherein a ratio of the maximum strut width to minimum strut width is between about 1:1 and about 10:1.

Claim 165. (New) The radially expandable stent of claim 121 wherein the radially expandable stent comprises a second serpentine portion, wherein a portion of the at least one serpentine ring is integrally formed with the second serpentine portion, wherein the radially expandable stent defines a length and the first portion and second portion define outer diameters,

wherein the outer diameters of the radially expandable stent vary along their length.

Claim 166. (New) The radially expandable stent of claim 121 wherein the radially expandable stent comprises a second serpentine portion, wherein a portion of the at least one serpentine ring is integrally formed with the second serpentine portion, wherein the radially expandable stent defines a length and the first portion and second portion define an outer diameter,

wherein the outer diameter of the radially expandable stent is substantially constant along the length.